Theodore Wu

(250)-889-8528 | theowu23451@gmail.com | https://wu-theodore.github.io
https://github.com/theowu23451 | https://www.linkedin.com/in/theodore-wu/

Education:

University of Toronto | Toronto, Canada | *2018-2023*
Bachelor of Applied Science (BASc) in Engineering Science, Major in Machine Intelligence | **cGPA:** 3.95/4.0

Research Skills:

- Experienced with conference manuscript writing and fast iteration on research ideas.
- Proven ability to quickly survey, summarize, and taxonomize research literature.
- Skilled in delivering industry-quality software applications that align with stakeholder needs.
- Skilled in implementation of complex deep learning models using PyTorch, TensorFlow, and Keras software.
- Skilled in data collection and preprocessing from signal, text, image, and tabular formats.
- Rigorous academic background in areas such as deep learning, machine learning, artificial intelligence, distributed systems, operating systems, convex optimization, Bayesian probability, decision support systems, data structures & algorithms, computer security, digital & computer systems, and ethics.

Honors and Awards:

Dean's Honours List | Fall 2018 – Winter 2023

- Recognition for full time students who demonstrated academic excellence in an individual semester.

Engineering Science Award of Excellence | Winter 2023

- Presented to the top graduating Engineering Science students for the academic achievement of a 3.9 cGPA or higher across the first seven semesters of their career in Engineering Science.

University of Toronto Scholars Program | Fall 2018

- Awarded to approximately 800 incoming undergraduate students to recognize outstanding academic performance.

Engineering Science Chairs' Scholarship | Fall 2020

- Given to a student completing the foundation years and proceeding to year three of Engineering Science.
- Issued on the chair's recommendation on the basis of outstanding academic achievement and extra-curricular involvement.

Constant Temperature Limited Scholarship | Fall 2021

- Awarded to a student who achieved high academic standing in their third year of studies and is proceeding into their fourth year of studies in engineering.

Work Experience:

Amazon Canada Fulfillment Services, ULC. Vancouver, Canada
Software Development Engineer Intern | Summer 2022

- Designed and implemented a data analysis and visualization tool that provides insights on service runtime logs.
- Leveraged Python, Scala, SQL, and TypeScript using various AWS technologies such as RedShift, EMR, and Lambda.
- Reduced theoretical time-to-resolution for a historical high-severity ticket from the scale of dev-hours to dev-minutes and identified a group of clients producing potential inefficiencies within the system.

Huawei Technologies Canada Co., Ltd. Markham, Canada
IC Lab Assistant Machine Learning Engineer | Summer 2021 – Spring 2022

- Designed and deployed a machine learning tool using Python to estimate electrical properties during circuit design.
- Tested and verified the tool's performance through iterative feedback and close collaboration with senior designers.

University of Toronto Multimedia Lab. Toronto, Canada
Research Intern | Summer 2020

- Co-authored a research literature survey of over 700 works in the field of computational pathology.
- Submitted literature survey as journal work to "Medical Image Analysis".

Notable Projects:

Fault Classification in Connected Autonomous Vehicle (CAV) Platoons | *Undergraduate Thesis*

- Implemented a multi-head attention deep learning network in PyTorch to classify CAV platoon fault classes.
- Trained and tested on platoon velocity signals extracted from SimuLink simulations and experimental lab robots.
- First author for an accepted contributed paper to ICRA London 2023.

Persistent, Scalable, and Replicated Distributed Key-Value Storage System | *Academic (Group Project)*

- Implemented a distributed key-value store in Java with consistent hashing, failure detection, and replication features.
- Designed communication protocols for server node addition/removal, data replication, and server-client interaction.

GM Blue Plan Asset Management Task Scheduler | *Capstone Project*

- Consulted with stakeholders from GM Blue Plan to build a Python application that optimally schedules asset management tasks over a specified time frame with configurable weekly schedule constraints.
- Designed two novel greedy algorithms that improve on historical task schedules in all relevant quality metrics.

Reactor Log Analysis Tool | *Intern Project*

- Developed an automated data analytics pipeline for >1TB/hr runtime logs using distributed processing technology.
- Visualized precomputed data summaries on an interactive user dashboard for live data insights.
- Presented project to a group of software developers, senior software managers, and business managers.

ParaEst: ML-based Parasitic Capacitance Estimation Tool | *Intern Project*

- Deployed a Support Vector Regressor model to estimate parasitic capacitances on schematic circuits.
- Encapsulated ML model with a PyQt application and integrated the application with Cadence CAD software.
- Initiated user testing iterations and live demonstrations to maximize the useability of the tool for senior designers.

Breast Mammogram Lesion Detection and Diagnosis | *Academic (Group Project)*

- Fine-tuned a Mask R-CNN object detection model to diagnose breast mammogram lesions in the INbreast dataset.
- Validated the Mask R-CNN model's performance on test data alongside a fine-tuned baseline ResNet50 model.

ClutterCutter | *Academic (Group Project)*

- Implemented a recurrent neural network in PyTorch to classify incoming emails into five distinct categories.
- Showcased expertise with the data science workflow, including data collection, pre-processing, and ML model design.
- Integrated the Weights & Biases API to automate experiment and data visualization.

Survey of Computational Pathology | *Research*

- Authored a computational pathology research literature survey spanning over 700 published research articles.
- Highlights recent trends with a taxonomy of papers and a comprehensive discussion on the direction of the field.
- Preprint available at: https://arxiv.org/abs/2304.05482.

Deep Recurrent Attention Model | *Personal*

- Implemented a deep learning model in TensorFlow intended for use in tissue sample classification.
- Achieved 95% classification accuracy on MNIST, which approaches the results from the original paper.

Leadership Positions:

VP Academics – University of Toronto Machine Intelligence Student Team | Summer 2021 – Summer 2022

- Supervised the creation and operations of an ML study group, a paper reading group, and various ML student projects.
- Organized a large-scale club event with distinguished academic speakers on the ethics of AI.

Co-President – Skule Badminton Club | Summer 2020 – Summer 2021

- Mobilized a team of executives to implement badminton events and create a favorable club experience for members.
- Ideated novel virtual events and restructured the executive team to transition the club through a virtual semester.
- Successfully approved the club for UofT Co-Curricular Record program accreditation.

Peer Mentor – NSight Mentorship Program | Fall 2020 – Summer 2021

- Mentored a first-year Engineering Science student.
- Demonstrated inter-personal communication, mentoring, and active listening skills.